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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/604,357

07/14/2003

Chun-Ming Hsu

PMXP0161USA

1356

27765

7590

08/23/2006

NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION

P.O. BOX 506

MERRIFIELD, VA 22116

EXAMINER

DIEP, NHON THANH

ART UNIT

PAPER NUMBER

2621

DATE MAILED: 08/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/604,357	HSU ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Nhon T. Diep	2621	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 January 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-7 is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>7/03; 1/06</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

1. This application is in condition for allowance except for the following formal matters:

Claims 1-7 are objected to because of the following informalities: With regard to claim 1, lines 20 and 25, please change "correspondingthird" to read "corresponding third"; and "regionsoffset" to read "regions offset". Appropriate correction is required.

The disclosure is objected to because of minor informalities.

Paragraph 0034 , line 7: please change "the collocated block **70**" to "the collocated block **72**"; line 8: change "vectordetermined" to read "vector determined". And also review the specification in its entirety for more minor typo error (paragraph 0048 for example). Correction is required. See MPEP § 608.01(b).

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

2. The following is a statement of reasons for the indication of allowable subject matter: The present invention relates to digital video compression techniques using motion estimation. The various related prior art do not anticipate or render obviousness a method for determining a motion vector of a current block of a current frame for indicating a region in a reference frame comprising pixel information correlating to the current block, the current frame and reference frame being part of a sequence of frames forming a digital video, the method comprising:

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correlating pixel information of the current block with pixel information of the reference frame indicated by a first motion vector of a block proximate to the current block to determine a first cost function;

correlating pixel information of the current block with pixel information of the reference frame indicated by a second motion vector to determine a second cost function, the second motion vector being of a block of the reference frame spatially coincident with the current block;

correlating pixel information of the current block with pixel information of at least a predetermined region of the reference frame to determine at least a third motion vector and corresponding third cost function;

selecting at least one of the first, second, and third motion vectors having the lowest cost function as a candidate motion vector;

correlating pixel information of the current block with of regions offset from regions in the reference frame indicated by the candidate motion vectors to determine refined candidate motion vectors and corresponding refined cost functions; and

selecting the refined candidate motion vector having the lowest refined cost function as the motion vector of the current block as specified in claim 1.

### ***Conclusion***

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Lee et al (2003/0103568 A1) discloses pixel data selection device for motion compensated interpolation and method thereof.

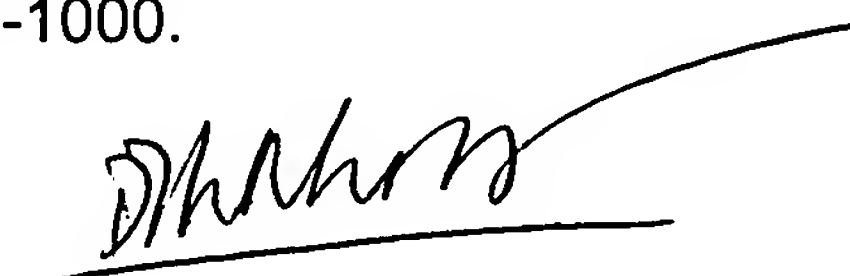
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- b. Olivieri (US 6,996,175) discloses a motion vector estimations
- c. Pau et al (US 6,891,891) discloses motion estimation process and system.
- d. Au et al (US 6,842,483) discloses a device, method and digital video encoder for block-matching motion estimation.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nhon T. Diep whose telephone number is 571-272-7328. The examiner can normally be reached on m-f.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



NHON DIEP  
PRIMARY EXAMINER

ND  
8/21/06